What is claimed is:

1. An isolated nucleic acid molecule, wherein said isolated nucleic acid molecule comprises a first nucleic acid sequence selected from the group consisting of:

(a) a second nucleic acid sequence which has at least 55% identity SEQ ID NO:1, SEQ ID NO:7, or SEQ ID NO:13, wherein said identity can be determined using a DNAsis computer program and default parameters;

(b) a third nucleic acid sequence which has at least 95% identity to SEQ ID NO:4, SEQ ID NO:10, or SEQ ID NO:16, wherein said identity is determined using the DNAsis computer program and default parameters;

(c) a fourth nucleic acid sequence which encodes a first amino acid sequence which has at least 40% identity to SEQ ID NO:2, or SEQ ID NO:14, wherein said identity is determined using the DNAsis computer program and default parameters;

(d) a fifth nucleic acid sequence which encodes a second amino acid sequence which has at least 90% identity SEQ ID NO:5, SEQ ID NO:8, SEQ ID NO:11 or SEQ ID NO:17 wherein said identity is determined using the DNAsis computer program and default parameters;

(e) a sixth nucleic acid sequence which is an allelic variant of SEQ ID NO:1, SEQ ID NO:4, SEQ ID NO:7, SEQ ID NO:10, SEQ ID NO:13, or SEQ ID NO:16; and

(f) a seventh nucleic acid sequence complementary to the second, third, fourth, fifth or sixth nucleic acid sequence.

2. The isolated nucleic acid molecule of claim 1 , wherein said isolated nucleic acid molecule comprises an eighth nucleic acid sequence selected from the group consisting of :

(a) a ninth nucleic acid sequence which has at least 70% identity to SEQ ID NO:1, SEQ ID NO:7, or SEQ ID NO:13, wherein said identity is determined using the DNAsis computer program and default parameters;

(b) a tenth nucleic acid sequence which encodes a third amino acid sequence which has at least 70% identity to SEQ ID NO:2, or SEQ ID NO:14, wherein said identity is determined using the DNAsis computer program and default parameters;

(c) an eleventh nucleic acid sequence which is an allelic variant of SEQ ID NO:1, SEQ ID NO:7, or SEQ ID NO:13; and

(d) a twelfth nucleic acid sequence complementary to the ninth, tenth, or eleventh nucleic acid sequences.

3. An isolated nucleic acid molecule, wherein said isolated nucleic acid molecule comprises a first nucleic acid sequence selected from the group consisting of:

(a) a second nucleic acid sequence comprising at least 70 contiguous nucleotides of SEQ ID NO:1, SEQ ID NO:7 or SEQ ID NO:13;

(b) a third nucleic acid sequence comprising at least 350 contiguous nucleotides of SEQ ID NO:4, SEQ ID NO :10, and SEQ ID NO:16;

(c) a fourth nucleic acid sequence comprising at least 450 contiguous nucleotides of SEQ ID NO:19;

(d) a fifth nucleic acid sequence which encodes a first amino acid sequence comprising at least 20 contiguous residues of the sequence shown in SEQ ID NO:2, and SEQ ID NO:14;

(e) a sixth nucleic acid sequence which encodes a second amino acid sequence comprising at least 100 contiguous residues of the sequence shown in SEQ ID NO:5, SEQ ID NO:8, SEQ ID NO:11, or SEQ ID NO:17;

(f) a seventh nucleic acid sequence which encodes a third amino acid sequence comprising at least 200 contiguous residues of the sequence shown in SEQ ID NO:20; and

(h) an eighth nucleic acid sequence complementary to the second, third, fourth, fifth, sixth or seventh nucleic acid sequence.

4. The isolated nucleic acid molecule of claim 3, wherein said isolated nucleic acid molecule comprises a ninth nucleic acid sequence selected from the group consisting of:

(a) a tenth nucleic acid sequence comprising at least 150 contiguous nucleotides of SEQ ID NO:1, SEQ ID NO:7 or SEQ ID NO:13;

(b) an eleventh nucleic acid sequence comprising at least 500 contiguous nucleotides of SEQ ID NO:4, SEQ ID NO:7, SEQ ID NO:10 or SEQ ID NO:16;

(c) a twelfth nucleic acid sequence comprising at least 700 contiguous nucleotides of the sequence shown in SEQ ID NO:19;

(d) a thirteenth nucleic acid sequence which encodes a fourth amino acid sequence comprising at least 50 contiguous residues of the sequence shown in SEQ ID NO:2 or SEQ ID NO:14;

(e) a fourteenth nucleic acid sequence which encodes a fifth amino acid sequence comprising at least 200 contiguous residues of SEQ ID NO:5, SEQ ID NO:8, SEQ ID NO:11 or SEQ ID NO:17;

(f) a fifteenth nucleic acid sequence which encodes a sixth amino acid sequence comprising at least 300 contiguous residues of the sequence shown in SEQ ID NO:20; and

(g) a sixteenth nucleic acid sequence complementary to the tenth, eleventh, thirteenth, fourteenth or fifteenth nucleic acid sequence.

5. An isolated nucleic acid molecule, wherein said isolated nucleic acid molecule comprises a first nucleic acid sequence selected from the group consisting of :

(a) a second nucleic acid sequence which is selected from the group consisting of SEQ ID NO:1, SEQ ID NO:4, SEQ ID NO:7, SEQ ID NO:10, SEQ ID NO:13, SEQ ID NO:16, and SEQ ID NO:19;

(b) a third nucleic acid sequence which is selected from the group consisting of SEQ ID NO:2, SEQ ID NO:5, SEQ ID NO:8, SEQ ID NO:11, SEQ ID NO:14, SEQ ID NO:17, and SEQ ID NO:20;

(c) a fourth nucleic acid sequence complementary to the second, third or fourth nucleic acid sequence.

6. A recombinant vector comprising at least one nucleic acid molecule of claim 1.

7. A fusion construct comprising at least one nucleic acid molecule of claim 1.

8. An isolated nucleic acid molecule of claim 1, wherein said isolated nucleic acid molecule comprises a fusion sequence.

9. A recombinant cell comprising at least one nucleic acid molecule of claim 1.

10. An isolated canine IgG heavy chain protein, wherein said protein comprises an amino acid sequence encoded by the isolated nucleic acid molecule of claim 1.

11. An isolated the canine IgG heavy chain protein, wherein said protein comprises an amino acid sequence encoded by the nucleic acid sequence of claim 2.

12. A canine IgG heavy chain protein, wherein said protein comprises an amino acid sequence encoded by the isolated nucleic acid molecule of claim 3 or an amino acid sequence selected from the group consisting of SEQ ID NO:2, SEQ ID NO:5, SEQ ID NO:8, SEQ ID NO:11, SEQ ID NO:14, SEQ ID NO:17, or SEQ ID NO:19.

13. An isolated protein, wherein said protein comprises an amino acid sequence encoded by the isolated nucleic acid molecule of claim 4 or an amino acid

sequence selected from the group consisting of SEQ ID NO:2, SEQ ID NO:5, SEQ ID NO:8, SEQ ID NO:11, SEQ ID NO:14, SEQ ID NO:17, and SEQ ID NO:19.

14. An isolated antibody selective for a protein of claim 10.

15. An isolated cell comprising at least one protein claim 10.

16. An isolated fusion protein comprising at least one protein claim 10.

17. A method to detect IgG nucleic acid comprising::

(a) contacting an isolated the isolated nucleic acid molecule of claim 1 with a putative IgG nucleic acid-containing composition under conditions suitable for formation of a heavy chain of canine IgG nucleic acid molecule/IgG nucleic acid complex; and

(b) detecting the presence of IgG nucleic acid by detecting the heavy chain of canine IgG nucleic acid molecule/IgG nucleic acid complex.

18. A kit, comprising a container comprising at least one composition selected from the group consisting of:

(a) the isolated nucleic acid molecule of claim 1;

(b) a protein encoded by the isolated nucleic acid molecule;

(c) an inhibitor of the isolated nucleic acid molecule; and

(d) an inhibitor of the protein encoded by the isolated nucleic acid molecule.

19. An isolated nucleic acid molecule selected from the group consisting of:

(a) a first isolated nucleic acid molecule comprising at least 75 contiguous nucleotides identical in sequence to an at least 75 contiguous nucleotide region of SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:51, SEQ ID NO:52 or SEQ ID NO:53; and

(b) a second nucleic acid molecule comprising a nucleic acid sequence that is at least 90 percent identical in sequence to SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:51, SEQ ID NO:52 or SEQ ID NO:53, and a fragment thereof, wherein said fragment is at least 80 nucleotides in length, and wherein said percent identity can be determined by a DNAsis™ computer program with a gap penalty set at 5, the number of top diagonals set at 5, a fixed gap penalty set at 10, a k-tuple set at 2, a window size set at 10 and a floating gap penalty set at 10.

20. The nucleic acid molecule of Claim 19, wherein said isolated nucleic acid molecule encodes a protein comprising amino acid sequence SEQ ID NO:50.

21. A recombinant molecule comprising the nucleic acid molecule of Claim19 operatively linked to a transcription control sequence.

22. A recombinant virus comprising the isolated nucleic acid molecule of Claim 19.

23. A recombinant cell comprising the isolated nucleic acid molecule of Claim 19.

24. An isolated nucleic acid molecule selected from the group consisting of:

(a) a first nucleic acid molecule having at least 40 contiguous nucleotides identical in sequence to at least 40 contiguous nucleotide region of SEQ ID NO:54, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:59, SEQ ID NO:60, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:64,SEQ ID NO:65, SEQ ID NO:67, SEQ ID NO:68 or SEQ ID NO:70; and

(b) a second nucleic acid molecule comprising a first nucleic acid sequence that is at least 80% identical in sequence to SEQ ID NO:54, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:59, SEQ ID NO:60, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:64,SEQ ID NO:65, SEQ ID NO:67, SEQ ID NO:68 and SEQ ID NO:70, and a fragment thereof, wherein said fragment is at least 50 nucleotides in length, and wherein said percent identity can be determined by a DNAsis™ computer program with a gap penalty set at 5, the number of top diagonals set at 5, a fixed gap penalty set at 10, a k-tuple set at 2, a window size set at 10 and a floating gap penalty set at 10.

25. The nucleic acid molecule of Claim 24, wherein said isolated nucleic acid molecule encodes a protein comprising an amino acid sequence selected from the group consisting of SEQ ID NO:55, SEQ ID NO:58, SEQ ID NO:61, SEQ ID NO:66, and SEQ ID NO:69.

26. An isolated nucleic acid molecule selected from the group consisting of:

(a) a first nucleic acid molecule comprising a first nucleic acid sequence encoding a first protein selected from the group consisting of:

(i) a second protein that is at least 85 percent identical in sequence to SEQ ID NO:50, wherein said percent identity can be determined by the DNAsis™ computer program with a gap penalty set at 5, the number of top diagonals set at 5, a fixed gap penalty set at 10, a k-tuple set at 2, a window size set at 10 and a floating gap penalty set at 10; and

(ii) a third protein comprising a fragment of at least 45 contiguous amino acids identical in sequence to an at least 45 contiguous

amino acid sequence of the second protein;

(b) a second nucleic acid molecule comprising a second nucleic acid sequence encoding a fourth protein that comprises an at least 40 contiguous amino acid region identical in sequence to an at least 40 contiguous amino acid region of SEQ ID NO:50; and

(c) a third nucleic acid molecule complementary to the first or second nucleic acid molecule

27. The isolated nucleic acid molecule of Claim 26, wherein said isolated nucleic acid molecule comprises a nucleic acid sequence encoding an IL-13R□1 protein of at least 45 contiguous amino acids in length, wherein said nucleic acid sequence comprises an at least 135 contiguous nucleotide sequence identical in sequence to at least 135 contiguous nucleotide region of SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:51, SEQ ID NO:52 or SEQ ID NO:53.

28. An isolated nucleic acid molecule selected from the group consisting of:

(a) a first nucleic acid molecule comprising a first nucleic acid sequence encoding a first protein selected from the group consisting of:

(i) a second protein comprising an amino acid sequence that is at least 70 percent identical in sequence to SEQ ID NO:55, SEQ ID NO:58, SEQ ID NO:61, SEQ ID NO:66, and SEQ ID NO:69, wherein percent identity is determined by a DNAsis™ computer program with a gap penalty set at 5, the number of top diagonals set at 5, a fixed gap penalty set at 10, a k-tuple set at 2, a window size set at 10 and a floating gap penalty set at 10; and

(ii) a second protein comprising a fragment of at least 40 contiguous amino acids identical in sequence to an at least 40 contiguous amino acids of the first protein;

(b) a second nucleic acid molecule comprising a second nucleic acid sequence encoding a protein that comprises an at least 30 contiguous amino acid region identical in sequence to an at least 30 contiguous amino acid region of SEQ ID NO:55, SEQ ID NO:58, SEQ ID NO:61, SEQ ID NO:66, and SEQ ID NO:69;

(c) a third isolated nucleic acid molecule complementary to the first or second nucleic acid molecule.

29. The nucleic acid molecule of Claim 28, wherein said protein binds to

canine IL-13, as measured by its ability to inhibit IL-13-stimulated TF-1 cell proliferation.

30. The nucleic acid molecule of Claim 28, wherein said isolated nucleic acid molecule comprises a nucleic acid sequence that encodes an IL-13R□2 protein of at least 40 amino acids in length, wherein said nucleic acid sequence comprises an at least 120 contiguous nucleotide sequence identical in sequence to an at least 120 contiguous nucleotide region of SEQ ID NO:54, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:59, SEQ ID NO:60, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:64,SEQ ID NO:65, SEQ ID NO:67, SEQ ID NO:68 or SEQ ID NO:70, wherein said isolated nucleic acid molecule does not hybridize under conditions comprising hybridization at 65°C in 0.1 X SSC followed by washing at 65°C in 0.1 X SSC with the third nucleic acid sequence selected from the group consisting of SEQ ID NO:95, SEQ ID NO:96, SEQ ID NO:97 and SEQ ID NO:98.

31. An isolated protein selected from the group consisting of :

(a) a first protein comprising an at least 40 contiguous amino acid region identical in sequence to an at least 40 contiguous amino acid region of SEQ ID NO:50; and

(b) a second protein comprising an amino acid sequence that is at least 85 percent identical in sequence to amino acid sequence SEQ ID NO:50 and a fragment thereof, wherein said fragment is at least 45 amino acids in length, wherein percent identity can be determined by a DNAsis™ computer program.

32. The isolated protein of Claim 31, wherein said protein is encoded by a nucleic acid molecule comprising an at least 120 contiguous nucleotide region identical in sequence to an at least 120 contiguous nucleotide region of a nucleic acid sequence selected from the group consisting of SEQ ID NO:48, SEQ ID NO:49, and SEQ ID NO:52.

33. An isolated antibody that selectively binds to the isolated protein as set forth in Claim 31.

34. An isolated protein selected from the group consisting of:

(a) a first protein comprising a first amino acid sequence of at least 30 amino acids in length, wherein said first amino acid sequence has at least 30 contiguous amino acid region identical in sequence to at least 30 contiguous amino acid region of SEQ ID NO:55, SEQ ID NO:58, SEQ ID NO:61, SEQ ID NO:66, or SEQ ID NO:69; and

(b) a second protein comprising a third amino acid sequence that is at least 70 percent identical in sequence to SEQ ID NO:55, SEQ ID NO:58, SEQ ID NO:61,

SEQ ID NO:66, or SEQ ID NO:69, and a fragment thereof, wherein said fragment is at least 40 amino acids in length, wherein percent identity is determined by a DNAsis™ computer program.

35. The isolated protein of Claim 34, wherein said first protein is encoded by a nucleic acid molecule comprising an at least 90 contiguous nucleotide region identical in sequence to an at least 90 contiguous nucleotide region of SEQ ID NO:54, SEQ ID NO:57, SEQ ID NO:60, SEQ ID NO:63, SEQ ID NO:65 or SEQ ID NO:68.

36. A chimeric nucleic acid molecule encoding a fusion protein comprising:

(a) a nucleic acid molecule encoding a carrier protein domain; and

(b) a nucleic acid molecule encoding a canine IL-13Rα protein domain.

37. The chimeric nucleic acid molecule of Claim 36, wherein said fusion protein further comprises a linker sequence.

38. The chimeric nucleic acid molecule of Claim 36, wherein said carrier protein domain is an immunoglobulin Fc region.

39. The chimeric nucleic acid molecule of Claim 36, wherein said carrier protein domain is a canine immunoglobulin Fc region.

40. The chimeric nucleic acid molecule of Claim 36, wherein said carrier protein domain is a canine immunoglobulin IgG Fc region.

41. The chimeric nucleic acid molecule of Claim 36, wherein said IL-13Rα protein domain is a canine IL-13Rα1 protein domain.

42. The chimeric nucleic acid molecule of Claim 36, wherein said IL-13Rα protein domain is a canine IL-13Rα2 protein domain.

43. The chimeric nucleic acid molecule of Claim 36, wherein said chimeric nucleic acid molecule comprises a nucleic acid sequence selected from the group consisting of SEQ ID NO:71, SEQ ID NO:74, SEQ ID NO:77, SEQ ID NO:80 and SEQ ID NO:82.

44. The chimeric nucleic acid molecule of Claim 36, wherein said nucleic acid molecule encoding said IL-13Rα protein domain comprises a nucleic acid sequence selected from the group consisting of SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:52, SEQ ID NO:54, SEQ ID NO:57, SEQ ID NO:60, SEQ ID NO:63, SEQ ID NO:65, and SEQ ID NO:68.

45. The chimeric nucleic acid molecule of Claim 36, wherein said chimeric nucleic acid molecule comprises said nucleic acid molecule encoding said carrier protein

domain on the 5' end of said chimeric nucleic acid molecule and said nucleic acid molecule encoding said IL-13Rα protein domain on the 3' end of said chimeric nucleic acid molecule.

46. The chimeric nucleic acid molecule of Claim 36, wherein said chimeric nucleic acid molecule comprises said nucleic acid molecule encoding said IL-13α protein domain on the 5' end of said chimeric nucleic acid molecule and said nucleic acid molecule encoding said carrier protein domain on the 3' end of said chimeric nucleic acid molecule.

47. A fusion protein comprising:

(a) a carrier protein domain; and

(b) a canine IL-13Rα protein domain.

48. The fusion protein of Claim 47, wherein said IL-13Rα protein domain is selected from the group consisting of a canine IL-13Rα1 protein and canine IL-13Rα2 protein.

49. The fusion protein of Claim 47, wherein said fusion protein comprises an amino acid sequence selected from the group consisting of SEQ ID NO:72, SEQ ID NO:75, SEQ ID NO:78, and SEQ ID NO:81.

50. The fusion protein of Claim 47, wherein said IL-13Rα protein domain comprises an amino acid sequence selected from the group consisting of SEQ ID NO:50, SEQ ID NO:55, SEQ ID NO:58, SEQ ID NO:61, SEQ ID NO:66, and SEQ ID NO:69.

51. A therapeutic composition that, when administered to a canid, regulates an immune response in said canid, said therapeutic composition comprising a therapeutic compound selected from the group consisting of:

(a) a protein selected from the group consisting of a canine IL-13Rα and the fusion protein of claim 47;

(b) a mimetope of said protein;

(c) a multimeric form of said protein;

(d) an isolated nucleic acid molecule encoding the protein of (a), (b), or (c);

(e) an antibody that selectively binds the protein of (a), (b) or (c); and

(f) an inhibitor identified by its ability to inhibit the activity of the protein of (a), (b) or (c).

52. The composition of Claim 51, wherein said composition is selected from the group consisting of a naked nucleotide vaccine and a recombinant cell vaccine.

53. A method to regulate an immune response in a canid, said method

comprising administering to said canid a therapeutic composition of Claim 51.

54. A method to produce a canine IL-13Rα protein, said method comprising culturing a cell capable of expressing said protein.

55. A method to identify a compound that inhibits the activity of a canine IL-13Rα protein, said method comprising:

(a) contacting an isolated canine IL-13Rα protein with a putative inhibitory compound under conditions in which, in the absence of said compound, said IL-13Rα protein has IL-13 binding activity; and

(b) determining if said inhibitory compound inhibits said activity.

56. The method of Claim 55, wherein said canine IL-13Rα is selected from the group consisting of a canine IL-13Rα1 protein and a canine IL-13Rα2 protein.

57. The method of Claim 55, wherein step (a) further comprises a canine IL-13 protein.

58. An assay kit to identify an inhibitor of canine IL-13Rα protein, said kit comprising:

(a) an isolated canine IL-13Rα protein; and

(b) a means for determining inhibition of an activity of canine IL-13Rα, wherein said means enables the detection of inhibition, wherein detection of inhibition identifies an inhibitor of the ability of said canine IL-13Rα protein to bind IL-13.

59. The kit of Claim 58, wherein said kit further comprises a IL-13 protein.

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